

# ENGINEERING DATA

## STROMBERG-CARLSON NO. 400 RADIO RECEIVERS

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY  
ROCHESTER, NEW YORK

### IDENTIFICATION TABLE

Model	Input Power Frequency	Chassis	Cabinet	Speaker
400-H .....	50-60 Cycles	30107	30109	30137
400-HB .....	25-60 Cycles	30108	30109	30137
400-N .....	50-60 Cycles	30107	30547	30137
400-NB .....	25-60 Cycles	30108	30547	30137
400-S .....	50-60 Cycles	30107	30548	30137
400-SB .....	25-60 Cycles	30108	30548	30137

### SPECIFICATIONS

Voltage Rating .....	105-130 Volts
Input Power Frequency .....	Standard 50-60 Cycles; also available 25-60 Cycles
Type of Circuit .....	Superheterodyne
Tuning Ranges .....	A Band—540 to 1700 Kc.
Number of Tubes .....	Five
Type of Tubes .....	1—6A8G Oscillator and Modulator 1—6K7, I. F. Amplifier 1—6SQ7, Demodulator, A. V. C. and Audio 1—6V6G, Output 1—80, Rectifier
Input Power Rating .....	37 Watts
Intermediate Frequency .....	455 Kilocycles
Speaker Voice Coil Impedance at 400 Cycles .....	Approximately 5 Ohms
Speaker Field Coil Resistance .....	1800 Ohms

### FEATURES

This is a five-tube, single band, Superheterodyne receiver with automatic volume control and step tone control. It has been very carefully designed to provide the maximum in tone and performance for a set of this size.

### ACCESSORIES

#### Antenna

For best results use a Stromberg-Carlson Antenna. These Antennas are supplied in Kits containing all the necessary parts for mounting and installation.

#### Playing Records

Any Stromberg-Carlson Record Player can be attached to this receiver by using a Pc. 30647 phono. adapter.

#### Headset Attachment

Headphones can be very simply attached to this receiver. Ask for the Pc. 28303 Headset Package Assembly that comes complete with headphones and installation instructions.

#### Care of the Cabinet

The finish of Stromberg-Carlson Cabinets should be protected by using Stromberg-Carlson Cabinet Polish regularly. It is available in pint cans designated as Pc. 28601.

Nicks and scratches of most kinds can be repaired quickly and easily by proper use of the Pc. 26962 Touch-Up Kit. Complete instructions are provided with each kit.

#### Tools

Stromberg-Carlson can supply all the tools required for working on these sets. For example:

SD-29 Phillips Head Screwdriver  
24608 Aligning Tool  
Also pliers, cutters, screwdrivers, etc.

## NORMAL VOLTAGE READINGS

Use a good high resistance voltmeter having a resistance of at least 1000 ohms per volt.

Take all D. C. voltage readings on the 500 volt scale except where an asterisk appears.

Take all readings with chassis operating and tuned to 1000 Kc.—no signal.

Use a line voltage of 120 volts or make allowance for the variation.

Read from indicated socket terminals to chassis base.

See Location Chart on Page 3 for position of terminals.

A. C. Voltages are indicated by italics.

Tube	Circuit	Cap	Terminals of Sockets								Heater Voltages Between Heater Terminals	
			1	2	3	4	5	6	7	8	Socket Terminal Numbers	Volts A. C.
6A8G	Mod.—Osc.	0	0	0	+175	+82	—	+100	6.3	+2*	2-7	6.3
6K7	I. F. Amp.	0	0	0	+175	+65	+2*	—	6.3	+2*	2-7	6.3
6SQ7	Dem.—A. V. C. —Audio	—	0	0	0	0	0	+75	6.3	0	7-8	6.3
6V6G	Output	—	0	0	+160	+175	0	+75	6.3	+8*	2-7	6.3
80	Rectifier	—	+265	255	255	+265	—	—	5	—	1-4	5

\*Read on lowest possible scale of voltmeter.

## CONTINUITY TEST

**CAUTION:** Remove all tubes and disconnect the receiver from the power supply before making continuity test.

Use a good meter capable of measuring accurately up to several megohms.

The resistances given are often approximate, owing to Electrolytic Capacitors in the circuit. When this is the case, be sure to reverse the test leads and read the highest resistance.

Read from indicated terminals to chassis base except when an asterisk appears.

See Location Chart on Page 3 for position and numbering of socket terminals.

TERMINALS OF SOCKETS										
Tube	Circuit	Cap	1	2	3	4	5	6	7	8
6A8G	Mod.—Osc.	1.5M	S	S	*1800 $\Omega$	*24000 $\Omega$	47000 $\Omega$	24000 $\Omega$	S	150 $\Omega$
6K7	I. F. Amp.	1.5M	S	S	*1800 $\Omega$	*100000 $\Omega$	150 $\Omega$	1.5M	S	150 $\Omega$
6SQ7	Dem.—A. V. C. —Audio	—	S	10M	S	500000 $\Omega$	500000 $\Omega$	*250000 $\Omega$	S	S
6V6G	Output	—	S	S	*2200 $\Omega$	*1800 $\Omega$	300000 $\Omega$	*250000 $\Omega$	S	270 $\Omega$
80	Rectifier	—	1M or Greater	270 $\Omega$	270 $\Omega$	1M or Greater	—	—	—	—

Symbols used are as follows:  $\Omega$ —ohms; M—megohms; S—short; O—open.

\*These readings should be made from indicated terminals to terminal No. 1 of the rectifier socket (type 80 tube).

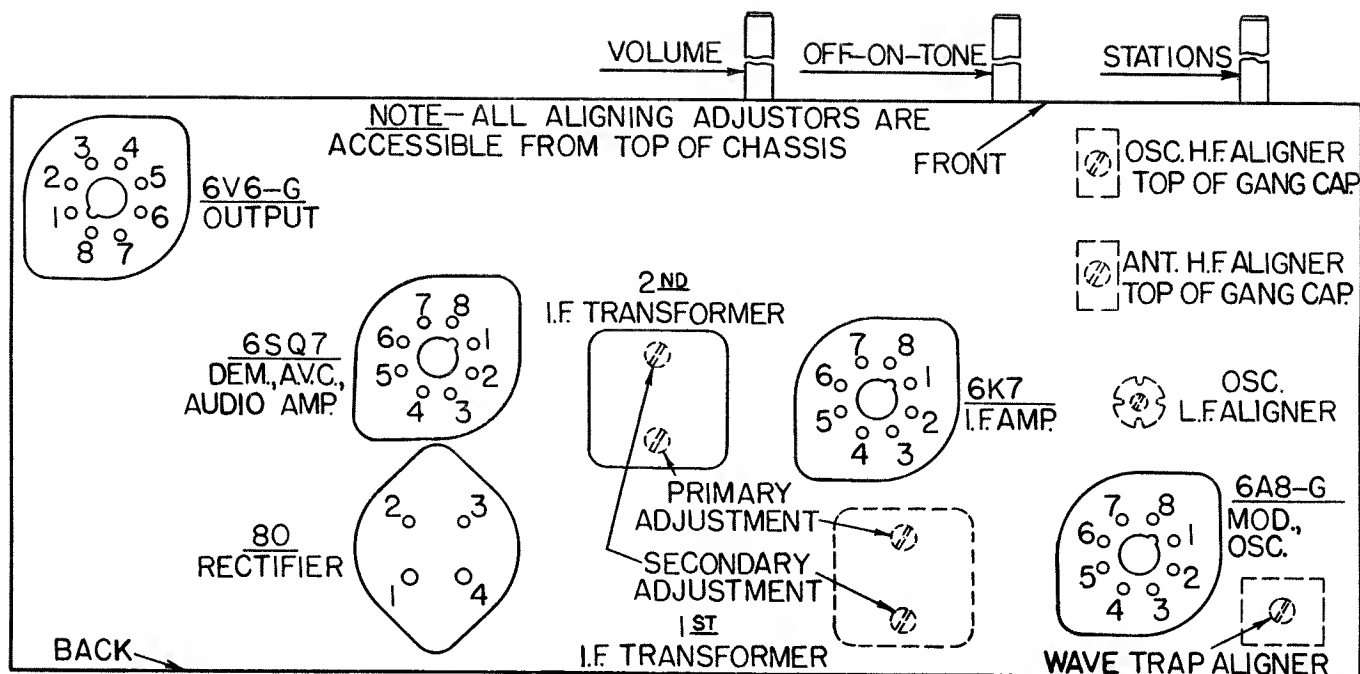
### Other Tests Not Shown on Chart

Antenna terminal to chassis base; 70 ohms.

Ground terminal to chassis base; "short".

Between terminals of A. C. plug; "open" with A. C. switch open; 17 ohms with A. C. switch closed.

R. F. coil tests, measured directly across R. F. coil terminals (see wiring diagram on Page 5 for location of R. F. coil terminals): L1—70 ohms; L2—4 ohms; L3—3 ohms; L4—4 ohms; L17—70 ohms.



LOOKING AT INSIDE BOTTOM OF CHASSIS

Location Chart

### ALIGNING INFORMATION

**NEVER REALIGN UNLESS ABSOLUTELY NECESSARY.**

Use a good modulated signal generator (test oscillator) with variable output voltage and a sensitive output meter across the voice coil of the speaker.

Always align using the smallest possible input from the signal generator (except when wave trap adjustments are made). A strong signal makes adjustments inaccurate.

Always have receiver volume control "full on".

Never align with tone control in bass position.

See Location Chart above for location of all the aligning adjustment screws.

#### Aligning Procedure (follow this order exactly)

##### I. Dial Pointer Adjustment.

With the plates of the gang tuning capacitor fully engaged, set the dial pointer directly on the upper black line at the low frequency end of the dial.

##### II. Intermediate Frequency Adjustments.

1. Tune set to extreme low frequency position. (.54 megacycles on dial scale).
2. Connect the ground terminal of the signal generator to the ground binding post of the receiver.
3. Introduce a modulated signal of 455 kilocycles, using a 0.1 microfarad capacitor in series with the lead from the signal generator to the grid cap of the 6A8G tube. (Do not remove the grid clip from this tube.)
4. Adjust the I. F. Aligners for maximum output in the following order:
  - a. Secondary of Second I. F. Transformer.
  - b. Primary of Second I. F. Transformer.
  - c. Secondary of First I. F. Transformer.
  - d. Primary of First I. F. Transformer.

##### III. Wave Trap Adjustment.

1. Tune set to 1,000 kilocycles.

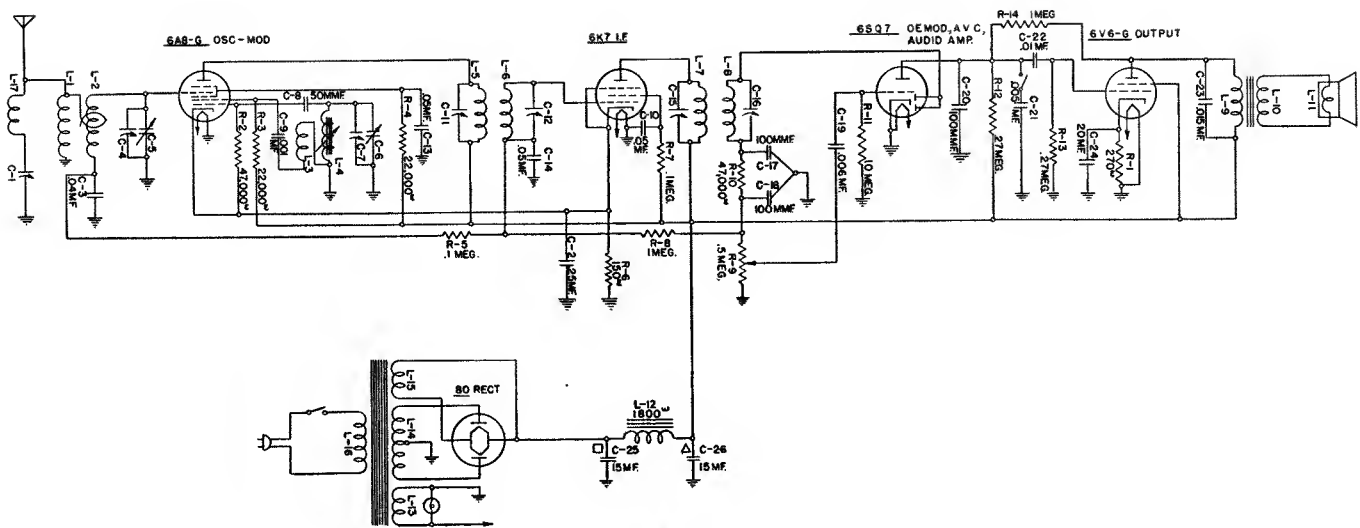
2. Leave the ground terminal of the signal generator connected to the ground binding post of the receiver.
3. Introduce a fairly strong modulated signal of 455 kilocycles to the antenna binding post using a 200 mmf. capacitor in series with the lead from the signal generator.
4. Adjust the wave trap aligner for minimum signal.

#### IV. Radio Frequency Adjustments.

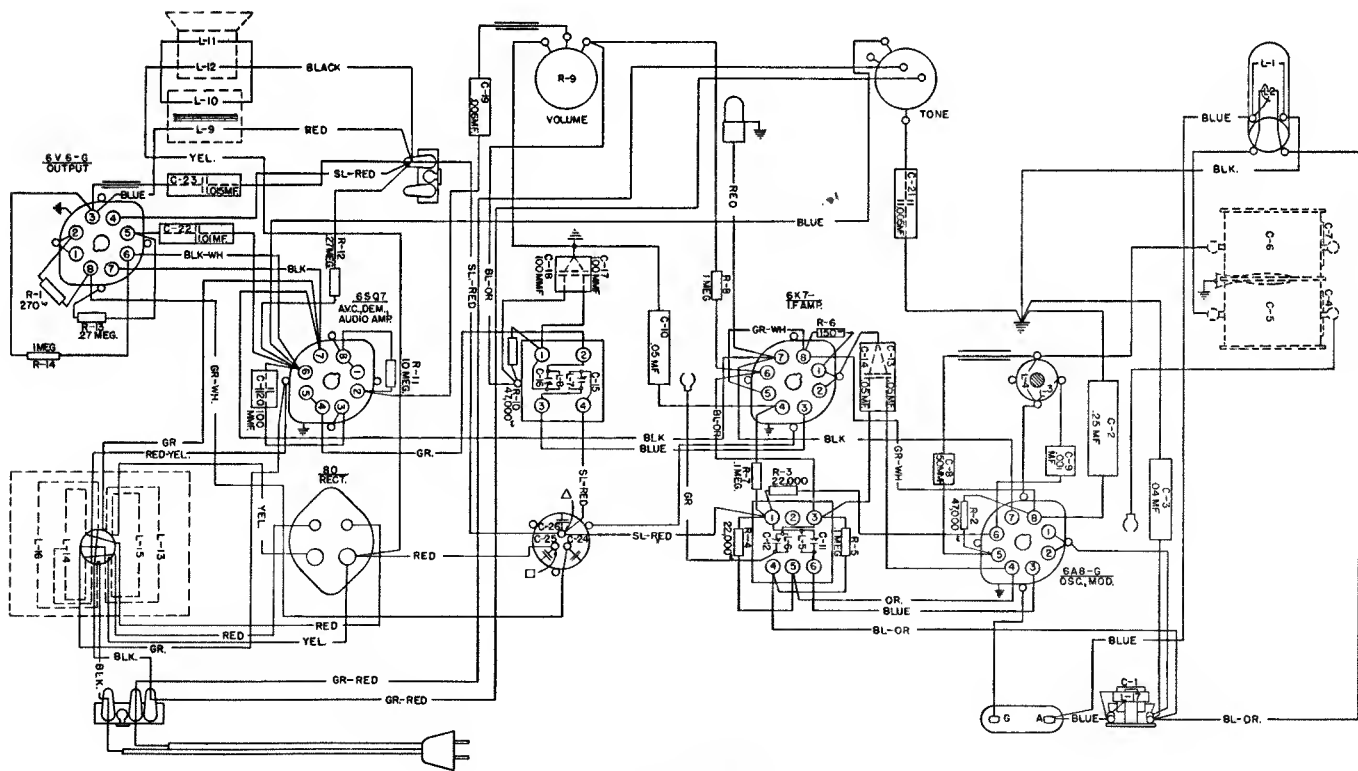
(Leave the signal generator connected in the same way as for the wave trap alignment.)

1. Set the signal generator's frequency and the receiver's tuning dial to 0.6 megacycles.
2. Adjust the iron core in the oscillator coil for maximum signal.
3. Set the signal generator's frequency and the receiver's tuning dial to 1.5 megacycles.
4. Adjust the two aligning capacitors on the variable capacitor for maximum signal.
5. Reset both the signal generator's frequency and the receiver's tuning dial to 0.6 megacycles and repeat operation 2.
6. Reset both the signal generator's frequency and the receiver's tuning dial to 1.5 megacycles and repeat operation 4.

NOTE. Operation 5 and 6 may be repeated as often as necessary to obtain maximum sensitivity.



Schematic Circuit



Wiring Diagram

## REPLACEMENT PARTS

### Capacitors

Piece Number	Circuit Description	Part
24405	C-3 . . . . .	.04 mf. Capacitor
24559	C-20 . . . . .	100 mmf. Capacitor
24994	C-10 . . . . .	.05 mf. Capacitor
25149	C-22 . . . . .	.01 mf. Capacitor
26151	C-19, 21 . . . . .	.005 mf. Capacitor
26512	C-12, 18 . . . . .	2—100 mmf. Capacitors
27108	C-13, 14 . . . . .	2—.05 Capacitors
27305	C-8 . . . . .	50 mmf. Capacitor
28594	C-23 . . . . .	.015 mf. Capacitor
29284	C-9 . . . . .	.001 mf. Capacitor
29973	C-2 . . . . .	.25 mf. Capacitor
30119	C-24, 25, 26 . . . . .	Electrolytic Capacitor 15 mf. 350 V., 15 mf. 250 V., 20 mf. 25 V.
30138	C-4, 5, 6, 7 . . . . .	Tuning Capacitor (2 gang)

### Coils, Transformers and Speaker

30120	L-1, 2 . . . . .	Antenna Coil
30121	L-3, 4 . . . . .	Oscillator Coil
30124	L-17, C-1 . . . . .	Wave Trap
30137	L-9, 10, 11, 12 . . . . .	Complete Speaker
SD 30	L-11 . . . . .	Cone for Speaker
SD 31	L-9, 10 . . . . .	Output Transformer
28649	L-13, 14, 15, 16 . . . . .	50/60 Cycle Power Transformer, 110 Volts
28650	. . . . .	25 Cycle Power Transformer, 110 Volts
30127	L-5, 6, C-11, 12 . . . . .	1st L. F. Transformer
30128	L-7, 8, C-15, 16 . . . . .	2nd L. F. Transformer

### Controls and Knobs

30136	R-9 . . . . .	Volume Control
26061	. . . . .	Switch, Off-On and Tone Control
28843	. . . . .	Control Knob
27628	. . . . .	Felt Washer for Knobs
29297	. . . . .	Dial Drive Shaft

### Resistors

26323	R-6 . . . . .	150 ohm Resistor—Type E
26326	R-1 . . . . .	270 ohm Resistor—Type E
26349	R-3, 4 . . . . .	22,000 ohm Resistor—Type E
26353	R-2, 10 . . . . .	47,000 ohm Resistor—Type E
26357	R-5, 7 . . . . .	.1 Megohm Resistor—Type E
26362	R-12, 13 . . . . .	.27 Megohm Resistor—Type E
26369	R-8, 14 . . . . .	1 Megohm Resistor—Type E
26381	R-11 . . . . .	10 Megohm Resistor—Type E

### Miscellaneous Parts

SD 26	. . . . .	Dial Glass
SD 28	. . . . .	Dial Drive Cord
SD 35	. . . . .	Set Screws for Dial Drive Pulley
26122	. . . . .	Antenna and Ground Terminal Strip
27088	. . . . .	Spring Washer for Mtg. Osc. Coil
27650	. . . . .	Spring for Knobs
28652	. . . . .	Power Supply Cord
27668	. . . . .	"C" Washer for Drive Shaft
28694	. . . . .	Pilot Lamp Socket Assembly
28695	. . . . .	Dial Pointer
28829	. . . . .	Dial Escutcheon wth Glass
29137	. . . . .	Dial Drive Pulley
29379	. . . . .	Palnut for Control Shafts
29479	. . . . .	Screws for Dial Escutcheon
29628	. . . . .	Spring for Dial Drive Cord
29956	. . . . .	Pilot Lamp
30049	. . . . .	Dial
30112	. . . . .	Felt Foot for Cabinets
30151	. . . . .	8-Prong Socket
30153	. . . . .	4-Prong Socket

## TOOLS AND ACCESSORIES

SD 29	. . . . .	Phillips No. 1 Screwdriver
24608	. . . . .	Aligning Tool
28601	. . . . .	Cabinet Polish (plnt can)
26962	. . . . .	Furniture Touch-Up Kit
28303	. . . . .	Headphone Pkg. Assembly
30647	. . . . .	Adapter for Connecting Phonograph Pick-up